

STUDIES IN BIGNONIACEAE 37: NEW SPECIES
OF BIGNONIACEAE FROM EASTERN SOUTH AMERICA

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Collections of Bignoniaceae received for identification from Cayenne and various Brazilian herbaria continue to include numerous undescribed species. Eastern Brazil is the world's most poorly known area for Bignoniaceae and one of the richest in species of the family. I thank the curators of CAY, GUA, HB, INPA, P, R, and RB for making available to me the collections which included the ten novelties described here.

ANEMOPAEGMA PABSTII A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, cavis, puberulis, sine consociebus glandularum in nodis inter petioles; pseudostipulae carentes. Folia 2-3-foliolata, interdum cirrho simplici; foliolis ovatis vel elliptico-ovatis, bullatis, infra puberulis. Inflorescentia floribus in racemo axillari dispositis. Calyx late campanulatus, truncatus, sparse puberulus; corolla aurata, tubulo-campanulata, extus lepidota; ovarium complanato-ellipsoideum, stipitatum. Capsula late elliptica usque ad suborbiculam, sparse lepidota, seminibus orbiculatis.

Liana; branchlets terete, hollow, longitudinally striate, puberulous with subappressed trichomes and minutely lepidote, not lenticellate, without interpetiolar glandular fields or pseudostipules. Leaves 2-3-foliolate, tendril apparently simple; leaflets ovate to elliptic-ovate, obtuse to acuminate at apex, rounded at base, coriaceous to subcoriaceous, distinctly bullate with veins and veinlets impressed above and raised below, 3-12 cm long, 2-9 cm wide, below rather densely puberulous with crisped trichomes to sparsely but distinctly papillose, above impressed-lepidote, the surface papillose and shiny, glabrate except for short trichomes along midvein and sometimes sparsely on lateral nerves; petioles 0.5-1.5 cm long, petiole 2-7 cm long, puberulous with

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crisped subappressed trichomes. Inflorescence an axillary raceme, puberulous. Flowers with the calyx broadly campanulate, truncate, 4-6 mm long, 6-8 mm wide, rather sparsely puberulous, inconspicuously lepidote glandular, the surface somewhat roughened; corolla yellow (noted as "rôseas" on one collection), tubular-campanulate above a narrowly tubular base, 4.5-5.5 cm long, 1.2-1.4 cm wide at mouth of tube, the tube 4-5 cm long, lobes 0.5-1 cm long, lepidote outside and on lobes, the margins ciliate; stamens didynamous, the anther thecae divaricate, 3 mm long, the filaments ca. 2.5 cm long, inserted ca. 10 mm from base of tube; ovary compressed-ellipsoid, densely minutely lepidote, 2-3 mm long, 1.5 mm wide, on a conspicuous 0.5 mm long stipe; disk pulvinate, almost subglobose, 1 mm long, ca. 2 mm wide, tapering to base of stipe. Capsule broadly elliptic to suborbicular, the apex apiculate, the base obtuse to short-stipitate, 7.5-10 cm long including the up to 1 cm long stipe, 5.5-7.5 cm wide, the surface tannish minutely roughened, shiny, scattered lepidote or with a few scattered impressed plate-shaped glands; seeds orbicular, ca. 3 cm diameter, the wing completely surrounding and not clearly differentiated from the body, wing gradually shading to thin and tannish at margin.

Type: BRAZIL: Bahia: BR-4 em km. 968, trepadeira do fl. amarelas, 16 Jan 1965, Pereira and Pabst 9482 (holotype, HB; isotype, MO).

Additional collections examined: BRAZIL: Minas Gerais: Ao longo da rodovia Rio-Bahia, perto da divisa com Bahia, 18 Jan 1955, Herlinger 10215 (MO, NY, UB). Abre campo; trepadeira, flores amarelas, 28 Jan 1965, Herlinger 10289 (UB). Goiás: Road Estreita to Tocantinópolis, km. 1-5; liana, corolla pale yellow, 9 Aug 1964, Prance and Silva 58633 (K, NY). 2 km N of Araguaína, 300 m, sandy cut-over woodland with well-developed cerrado, liana, fruit green, 13 Mar 1968, Irwin et al. 21139 (MO, NY).

This is one of the relatively few conspicuously puberulous leaved species of Anemopaegma and is probably most closely related to A. oligoneuron (Sprague and Sandw.) A. Gentry of the Guayana region and central Amazonia, some of whose forms have similarly bullate leaflets. Although it is probable that more than one species are currently treated under A. oligoneuron, all collections referred to that species differ from A. pabstii in such important characters as glabrous corolla tube, pubescent fruits, and trifid tendrils. The stem of A. oligoneuron is never hollow and the leaflets are palmately veined at the base. The Prance collection was originally identified (with a query) by D. Hunt at Kew as A. oligoneuron and the fruiting

Irwin collection was identified by me and distributed as A. cf. hilarianum, a related species but with a very different inflorescence. Later I referred all of these collections in the herbarium to A. cf. goyazense K. Schum. but that species, which might prove a part of A. scabriusculum, is actually a quite different cerrado subshrub with reduced petioles and petioles.

The Goiás collections of A. pabstii have large less conspicuously bullate somewhat more glabrescent leaflets than those from the Minas Gerais-Bahia border area but are almost certainly conspecific.

ANEMOPAEGMA SETILOBUM A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, puberulis, sine consociibus glandularum in nodis inter petioles; pseudostipulae parvae, subulatae. Folia 2-foliolata, interdum cirrho trifido, foliolis ovatis, infra molliter villosis. Inflorescentia floribus in panicula axillari contracta dispositis. Calyx cupulatus, 5-dentatus dentibus setaceis, villosus; corolla aurata, tubulo-campanulata, glabra; ovarium ellipticum, minute lepidotum. Capsula immatura stipitata, globosa, dense villosa.

Liana; branchlets terete, longitudinally striate, elenticellate, tannish puberulous, the nodes without interpetiolar glandular fields; pseudostipules small, subulate, paired in each leaf axil. Leaves 2-foliolate, sometimes with a trifid tendril, the leaflets ovate, the apex acute to acuminate, the base rounded to truncate or shallowly subcordate, 7-16 cm long, 3.5-11.5 cm wide, chartaceous, venation plane or slightly impressed above, prominulous below, softly villous below with tan simple trichomes, drying olive above, tannish olive below, petiolules 1-2.5 cm long, petioles 3.5-4.5 cm long, villous. Inflorescence axillary, branching near base, contracted-paniculate, villous. Flowers with the calyx cupular, with 5 setaceous teeth 2-3 mm long, otherwise truncate and 5-6 mm long by 7-8 mm wide, the teeth extended as calycine ridges near apex of calyx, tannish villous; corolla yellow, tubular-campanulate above a 1.5-2 cm long narrowly tubular base, this slightly expanded at extreme base, 4-5.5 cm long, 1.5-2 cm wide at mouth of tube, the tube 3-4 cm long, the lobes ca. 1 cm long, glabrous outside and inside even on lobes except inside at level of stamen insertion, stamens didynamous, inserted ca. 15 mm from base of tube, the filaments 1.5-2.8 cm long, anther thecae divaricate, 3 mm long; pistil 3-3.5 cm long, the ovary elliptic, flattened, slightly contracted at base, with a noticeable midline, 2.5 mm long, 1.3 mm wide, minutely lepidote and apparently slightly puberulous (moldy),

disk ovoid-pulvinate, 1 mm long, 2 mm wide. Fruit (immature) stipitate globose, densely brownish-villous, to 6 cm long including the 1.5 cm long stipe, to 3.5 cm in diameter; calyx not persistent; seeds undeveloped.

Type: BRAZIL: Espírito Santo: entre Linhares e São Matheus, planta com flores aureas vistosissimas, solo argilo-arenoso, 22 Feb 1965, Duarte 8861 (holotype, RB; isotypes, MO, HB).

Endemic to the Rio Doce region of coastal Brazil in Minas Gerais and Espírito Santo States.

Additional collections examined: BRAZIL: Minas Gerais: Reserva Florestal do Rio Doce, Mata da Lagoa do Anibal, 230-250 m, trepadeira, fruto ainda verde, 29 Aug 1973, Sucre, Martinelli and Silva 10114 (MO, RB). St. Paulo de Muriahe, June 1880, Millo + Netto s.n. R24001 (R), São João Baptista da Gloria, 28 Jul 1880, Netto 1208a (P), Espírito Santo: Aldiramento dos Indios, 4 Jul 1942, Bruno 106 (R).

This species is most closely related to A. jucundum Bur. and K. Schum., formerly placed in the segregate genus Pseudopaeegma, which is endemic to the catinga region of Rio Branco in extreme northern Amazonian Brazil. It differs from A. jucundum in yellow rather than red corolla, relatively contracted axillary inflorescence, larger thicker leaflets with a more densely pubescent undersurface, and especially a larger calyx with shorter much thicker subulate (rather than hair-like and to 6 mm long) calyx teeth. This species was given the nomen nudum Anemopaeegma nettoanum Glaziou (Mem. Soc. Bot. France 3f: 524. 1911). Sandwith, convinced of the identity of this plant with A. jucundum and mistrusting Glaziou's collection data, annotated the Paris "type" of Glaziou's nomen nudum as "surely collected not in Minas Gerais but in Amazonas or Guiana". The additional collections cited here prove that in this case Glaziou's data were correct and that the plant represents an undescribed taxon quite distinct from A. jucundum.

ARRABIDAEA LIMAE A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, puberulis, sine consociibus glandularum in nodis inter petioles. Folia 3-foliolata, foliolis anguste ellipticis. Inflorescentia terminalis floribus paucis. Calyx campanulatus, subtruncatus, glabratus; corolla purpurea pallida, tubulo-campanulata, extus puberula; ovarium oblongum, minute lepidotum. Capsula linearis, uni-formiter complanata, glabra.

Liana or shrubby vine, branchlets terete, minutely puberulous, glabrescent, without interpetiolar glandular fields or pseudostipules. Leaves 3-foliolate, the tendril not seen; leaflets narrowly elliptic to narrowly elliptic-oblong, obtuse at apex, sometimes minutely retuse and sometimes minutely mucronate, rounded at base, 1.1-5 cm long, 0.9-2.5 cm wide, chartaceous, minutely puberulous along midvein above and sometimes along main veins below, otherwise glabrous, drying dark gray or blackish, prominently reticulate above and below, petiolules 0.3-1.5 cm long, petioles 1-3.6 cm long, puberulous. Inflorescence two or three terminal flowers, puberulous. Flowers with the calyx campanulate, subtruncate, 6-7 mm long, 6-7 mm wide, glabrous or with a few inconspicuous subappressed trichomes near margin, eglandular, drying black; corolla (only 1 seen) whitish purple, tubular-campanulate, 3.2 cm long, 1.1 cm wide at mouth of tube, the tube 2.1 cm long, the lobes 1 cm long, puberulous outside and on lobes inside; stamens didynamous, the thecae divaricate, 3 mm long, the connective slightly thickened, not extended; pistil 2-2.5 cm long, the ovary oblong, 2-3 mm long, 1 mm wide, densely minutely lepidote; disk annular-pulvinate, 1 mm long, 3 mm wide. Capsule linear, compressed, 8.5-24 cm long, 1.4-1.8 cm wide, inconspicuously scattered lepidote, otherwise glabrous, drying uniformly blackish or dark brown, the midrib barely or not at all prominent, margins slightly raised, not angled; seeds thin, bilate, 1-1.4 cm long, 3.4-4.6 cm wide, the hyaline membranaceous wings rather sharply demarcated from the largish brown body.

Type: BRAZIL: Pernambuco: 6 km Espírito Santo na estrada para Araripina, caatinga, cipó com fl. alvo-violáceo, 4 Jan 1961, A. Lima 61-3592 (holotype, IPA; isotype, MO).

Endemic to the dry caatinga of Bahia and Pernambuco states in northeastern Brazil.

Additional collections examined: BRAZIL: Bahia: Serra do Curral Feio, 26 km NW of Lagoinha (which is 5.5 km SW of Delfino) on side road to Minas do Mimoso, caatinga, 650 m alt., 41°23' W, 10°16' S, 7 Mar 1974, R. Harley et al. 16926 (K, MO). Pernambuco: Araripina, Est. Exp. Araripe, em capoeiras baixas, arb. subscandente, "fl. am.-alaranjado", fr. imaturos, 4 Apr 1963, A. Lima 63-4159 (IPA).

This species is closely related to widespread and variable A. corallina (Jacq.) Sandw. which also occurs in the northeastern Brazilian caatinga. As represented in northeastern Brazil, A. corallina is very different from A. limae with thicker densely pubescent fruits, larger rounder, densely

pubescent leaves and many-flowered openly paniculate pubescent inflorescence. Elsewhere, especially in northern Venezuela, glabrate forms of A. corallina approach A. limae in some respects but these glabrate collections of A. corallina always have the typical tan-drying dark-pitted, square-margined fruit of that species and much larger differently shaped leaves without the conspicuously prominulous-reticulate venation (cf. Mansoa lanceolata (DC.) A. Gentry) which characterizes A. limae. Since the three available collections of A. limae show so little variation and A. corallina, as represented by many collections from northeastern Brazil, is so completely different where the two species overlap, I have little doubt that this caatinga plant is adequately differentiated for specific recognition.

ARRABIDAEA SIMPLEX A. Gentry, sp. nov.

Suffrutex erectus, ramulis subtetragonis, sine consociibus glandularum in nodis inter petioles. Folia simplicia, anguste ovata, plerumque glabra, infra lepidota, nervorum secundariorum trichomatibus in axillis. Inflorescentia floribus in racemo terminali dispositis. Calyx tubulo-infundibuliformis, irregulariter bilabiatus, lepidotus; corolla plerumque purpurea, tubulo-infundibuliformis, puberula; ovarium lineari-oblongum, lepidotum. Capsula anguste oblonga, glutinosa, seminibus complanatis, bialatis.

Erect glutinous subshrub 0.5-1 m tall; branchlets subtetragonal, finely longitudinally striate, glabrous or lepidote, without interpetiolar glandular fields or pseudostipules. Leaves simple, ovate to narrowly ovate, acute to acuminate, the base rounded, coriaceous, 3-12 cm long, 1-5 cm wide, above glabrous except for inconspicuous short trichomes near base of midvein, below lepidote, otherwise glabrous except for conspicuous tufts of trichomes in lateral nerve axils, sometimes also puberulous along midvein, inconspicuously 3-veined from base; petiole 0.8-2.5 cm long, lepidote and puberulous. Inflorescence a few-flowered terminal raceme, more or less lepidote, the pedicels 6-13 mm long. Flowers with the calyx tubular-infundibuliform, irregularly bilabiate to subtruncate, 16-29 mm long, 7-10 mm wide, glandular lepidote, glutinous, with a shiny surface when dry; corolla whitish to magenta, narrowly tubular-infundibuliform, 5.5-7.5 cm long, the tube 4.5-5.5 cm long, the lobes 1-1.5 cm long, puberulous; stamens didynamous, the thecae divaricate, 5 mm long; ovary linear-oblong, tetragonal, densely lepidote, 4 mm long, 1 mm wide; disk annular-pulvinate, 0.6 mm long, 3 mm wide. Capsule narrowly oblong, viscous, glandular-lepidote, 7.5-12 cm long, 2-2.4 cm wide,

the midrib not evident, margins slightly raised, drying dark brown with lighter flecks; seeds thin, bialate, 1.3-1.6 cm long, 2.1-4.5 cm wide, the truncate-tipped wings brown except a narrow marginal fringe, the seed body not clearly demarcated.

Type: BRAZIL: Goiás: Parque Nacional do Tocantins, entre a Sede e Veadeiros, em campo cerrado, arbusto de 60 cm, folhas glutinosas, flores de calice verde, corola externamente rosa-claras, internamente cremes, tecas marron-claras, 26 Sep 1967, DeHaas, Sr., J. H. de Haas, and R. B. Belém 344 (HB, holotype; MO, isotype).

Apparently endemic to the Rio Tocantins drainage from 700 to 1000 m in the northcentral part of the Brazilian planalto in Goiás State.

Additional collections examined: BRAZIL: Goiás: Chapada das Perdizes, cerrado aberto, arbusto, 20 Jul 1963, E. Heringer 8925 (NY, UB, fragm. MO). Serra dos Pirineus, 75 km N of Corumbá de Goiás on road to Niquelandia, valley of Rio Maranhão, gravelly ce rado slope, 700 m elev., viscous subshrub ca. 50 cm tall, corolla whitish, 21 Jan 1968, Irwin et al. 18931 (UB); same loc., shrub ca. 1 m tall, corolla violet, gallery margin, 22 Jan 1968, Irwin et al. 19041 (UB). Chapada dos Veadeiros, 10 km S of Alto do Paraíso (formerly Veadeiros), 1000 m, rocky slopes, erect subshrub 1 m tall, fruit green, 23 Mar 1969, Irwin et al. 24959 (NY, UB).

Arrabidaea simplex is one of the very few consistently simple-leaved species of Arrabidaea and of the whole tribe Bignonieae. It is also unusual in Arrabidaea in its simply racemose inflorescence and erect subshrub habit. The new species is closely allied to A. craterophora (DC.) Bur. Its most important difference from A. craterophora is in the much shorter broader fruit; the fruit of A. craterophora is linear and only about 1 cm wide but 15-19 cm long. Besides the fruit A. simplex differs from A. craterophora in its differently shaped clearly simple almost glabrate leaves with longer petioles. Arrabidaea craterophora has very short petioles less than (1-) 0.5 cm long; the predominant simple-leaved form of A. craterophora mostly has four nearly sessile leaves per node, these clearly derived from the four leaflets of a pair of 2-foliolate leaves. The secondary nerves of A. craterophora are more prominent beneath and the lower leaf surface is usually puberulous throughout and at least pilose along the median nerve. Arrabidaea craterophora occurs to the south and east of the localized range of A. simplex in the cerrado and cerrado of southern and central Goiás, Maranhão, Minas Gerais, Mato Grosso, and São Paulo. There is also a vegetatively distinctive form

of A. craterophora in the mata de cipó of Bahia which is possibly specifically distinct. Unlike A. simplex, the Bahia plant has a fruit similar to typical A. craterophora.

ARRABIDAEA TYNANTHOIDES A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, sine consociebus glandularum in nodis inter petioles. Folia 2-3-foliolata, interdum cirrho simplici, foliolis anguste ellipticis, glabratitis. Inflorescentia floribus in panicula terminali dispositis. Calyx campanulatus, bilabiatus, dense puberulus; corolla rosea, bilabiata, puberula; ovarium lineare, minute lepidotum. Capsula (immatura) linearis, conspicue lepidota.

Shrubby vine, branchlets terete with very tiny whitish lenticels when older, minutely dark-lepidote, otherwise glabrous without interpetiolar glandular fields or pseudostipules. Leaves 2-3-foliolate, sometimes with a simple tendril, the leaflets narrowly elliptic, more or less acute at apex (badly eaten by leaf-cutters), rounded at base, 5-12 cm long, 1.4-4.6 cm wide, subcoriaceous, slightly minutely puberulous near base above when young, otherwise glabrous except for minute dark-drying impressed lepidote scales, the venation prominulously reticulate; petiole 1.3-3 cm long, the petiolules 0.6-1.6 cm long, grooved above, dark-lepidote at maturity, minutely puberulous above when young. Inflorescence a terminal panicle, puberulous with short crisped trichomes, bracts and bracteoles minute or lacking. Flowers with the calyx campanulate, irregularly shallowly bilabiate, 6-8 mm long, 5-6 mm wide, densely whitish puberulous; corolla rose with yellow throat, strongly bilabiate, 1.5-1.7 cm long, bilabiate split over half its length, the two upper lobes almost fused, only ca. 3 mm long, the three lower lobes ca. 7 mm long, puberulous outside and on lobes inside; stamens didynamous, the anthers exerted, the thecae 2 mm long, only slightly divergent, not twisted and reflexed at base, the connective not extended; pistil ca. 15 mm long, the ovary linear, 4-5 mm long, 1 mm wide, slightly contracted at base, minutely rough-lepidote; disk patelliform-punctate, 0.5 mm long, 1.5 mm wide, indistinctly 5-lobed. Capsule (very immature and only 3 cm long) linear, conspicuously rough-lepidote.

Type: BRAZIL: Minas Gerais: Pedra Azul, Pedra da Conceição, arbusto escandente de fl. rosas e fauce amarela, 20 Apr 1964, Z. Trinta and E. Fromm 762 (holotype, HB; isotypes, MO, NY).

This species is exactly intermediate between *Arrabidaea* and *Tynanthus*, combining the distinctive flower shape of the latter with other characteristics of *Arrabidaea*. It is completely unlike any described species in either genus and superficially almost more reminiscent of some species of *Vitex* of the Verbenaceae.

DISTICTELLA CREMERSII A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, puberulis, sine consociibus glandularum in nodis inter petioles; pseudostipulae carentes. Folia 2-foliolata, interdum cirrho trifido, foliolis ellipticis, lepidotis, infra sparse puberulis saltem nervorum secundariorum in axibus. Inflorescentia floribus in panícula racemiformi dispositis. Capsula late ellipsoidea vel subglobosa, teres, dense tomentosa, seminibus suborbiculatis, exalatis.

Liana; branchlets terete, longitudinally striate, glabrescently puberulous, usually drying reddish brown, without interpetiolar glandular fields or pseudostipules. Leaves 2-foliolate, often with a trifid tendril; leaflets elliptic, acuminate to apiculate at apex, obtuse to rounded at base, coriaceous, 3.5-16 cm long, 1.5-7 cm wide, lepidote, especially below, puberulous in axils of lateral nerves below and usually also along midvein, without concentration of plate-shaped glands near base of midrib; petiolules 0.3-1.5 cm long, petiole 1.2-3.5 cm long, appressed puberulous. Inflorescence narrowly paniculate, racemiform, minutely puberulous. Flowers not seen. Capsule broadly ellipsoid to subglobose, completely terete, the midrib not visible, 5.5-8 cm long, 4-5 cm diameter, densely yellowish tomentose, without raised warty-glandular areas; seeds suborbicular, ca. 1.5 cm long, 1.5-1.8 cm wide, rather thin, uniformly brown and rather woody, wings not evident.

Type: FRENCH GUIANA: Haut Tampoc, le long des Criques pres de la Crique Alice; liane ripicole; fruit terminal a 2 loges contenant de nombreuses graines, 1 Apr 1977, *G. Cremers 4589* (holotype, MO; isotype, CAY).

Endemic to the interior of French Guiana.

Additional collections examined: FRENCH GUIANA: Haute Approuague, crique Matarony; liane, écorce noire-rougeatre, bois jaune, fruits verts, 20 Mar 1967, Oldeman B997 (MO, P). Riviere Camopi, végétation ripicole, en amont du Saut Yaniwé, liane ligneuse, fruits elliptiques de 11 x 5.5 cm, vert clair

(ES71), lignifiés, veloutés, pendants, 11 Mar 1974, deGranville 2080 (MO).

Vegetatively D. cremersii can not be reliably distinguished from widespread and variable D. magnoliifolia (HBK.) Sandw. which occurs sympatrically with it in the Guianas. However the round practically globose fruit of the new species is remarkably different from the flattened one of D. magnoliifolia. Besides its shape the fruit of D. cremersii differs from that of D. magnoliifolia in having a smooth (not raised warty) surface and a different generally denser, finer and more yellowish indumentum. The nearly orbicular wingless seeds of D. cremersii are also decidedly different from the transversely oblong, winged seeds of D. magnoliifolia. The fruit differences, similar to those between other species pairs of Bignoniaceae which I have interpreted as representing differential adaptations for wind versus water dispersal, would seem to mandate species recognition, especially in Distictella where most of the accepted species, though ecologically, geographically and even morphologically clear cut, are based predominantly on vegetative differences. The only vegetative feature which might help separate D. cremersii from D. magnoliifolia is the presence of trichomes in the leaf axils below, but some collections of D. magnoliifolia also have this character. In the interior Guianas and most of Amazonia the lateral nerve axils of D. magnoliifolia are uniformly glabrous but this character breaks down around the periphery of Amazonia (including coastal Guiana) where pubescent leaf axils tend to predominate, especially in juvenile leaves. In Amazonian Peru all collections from seasonally inundated forests (where D. magnoliifolia is one of the commonest lianas) have glabrous axils while most (but not all) from upland non-inundated habitats have pubescent lateral nerve axils. All fruits seen from outside French Guiana are of the typical compressed, wing-seeded form proving that pubescent leaf axils is not in itself a strong enough character for species recognition.

LUNDIA HELICOCALYX A. Gentry, sp. nov.

Frutex scandens, ramulis sparsim hirsutis, sine consociibus glandularum in nodis inter petioles; pseudostipulae carentes. Folia bifoliolata, interdum cirrho simplici, foliolis oblongo-ovatis, basim cordatis, pilosis. Inflorescentia hirsuta, floribus paucis. Calyx cupulatus, dentibus setaceis 4-6 mm longis; corolla tubulo-campanulata, velutina; stamina thecis dense pilosis, filamentis pilosis; ovarium oblongum, pilosum. Fructus ignotus.

Vine, branchlets terete, sparsely hirsute with stiff trichomes, finely longitudinally striate, without noticeable lenticels, interpetiolar glandular fields and pseudostipules absent. Leaves 2-foliolate, sometimes with a simple tendril, the leaflets oblong-ovate, the apex acute to short-acuminate, the base cordate, 5-11 cm long, 3-6.5 cm wide, chartaceous, venation prominulous below, plane above, pilose with rather scattered ca. 1 mm long trichomes, drying reddish black above, brown with darker brown main veins below, petiolules 1.5-2.3 cm long, petiole 3-4 cm long, hirsute. Inflorescence a few flowers terminal on a young lateral branch, sparsely hirsute. Flowers with the calyx cupular, with 5 setaceous teeth 4-6 mm long, otherwise truncate and 5 mm long by 4-5 mm wide, the teeth somewhat extended as calycine ridges, hirsute at base and along the ridge below each tooth; corolla tubular-campanulate above a narrowly tubular base, "yellow", 5-6 cm long, the tube 4-5 cm long, 1.8-2 cm wide at mouth of tube, the lobes 1-1.5 cm long, velutinous outside and on lobes; stamens didynamous, the anther thecae divaricate, densely pilose, ca. 4 mm long, the filaments pilose with subappressed ascending trichomes, 1.2-2 cm long, pilose, inserted ca. 10 mm from base of tube; pistil 3-3.5 cm long, the ovary oblong, 3 mm long, 1.5 mm wide, densely appressed-pilose, the style and stigmas densely pubescent with appressed trichomes; disc absent. Fruit unknown.

Type: BRAZIL: Piaui: Municipio Buriti dos Lopes, Canto do Morro, 90-100 m, capoeira de solo arenoso, 20 Jun 1972, Sucre and Silva 9211 (holotype, RB; isotype, MO)

The long-toothed calyx, reminiscent of the sun's rays as portrayed by gradeschoolers, is the distinctive mark of this species. Except for its long-setate calyx teeth this species could easily be mistaken for the hirsute form of Lundia densiflora DC. (i.e. Lundia stricta); that species differs conspicuously in a perfectly truncate calyx. No other species of Lundia besides L. densiflora has the thick tubular-campanulate corolla of the new species. If correctly described, the yellow corolla of L. helicocalyx is also distinctive.

MEMORA MOLLIS A. Gentry, sp. nov.

Frutex scandens, ramulis subteretibus, puberulis, sine consociebus glandularum in nodis inter petioles; pseudostipulae parvae, subfoliaceae. Folia pinnata vel bipinnata, foliolis usque ad 13, interdum cirrho simplici, foliolis ovatis vel ellipticis, infra molliter pilosis. Inflorescentia floribus in racemo elongato dispositis, minute puberula. Calyx

campanulatus, minute 5-denticulatus, puberulus; corolla aurata, tubulo-infundibuliformis, glabra; ovarium lineare, lepidotum et minute puberulum. Capsula linearis, valde complanata, lepidota, leviter puberula, seminibus complanatis, bialatis.

Liana; branchlets subterete, puberulous to glabrescent, drying brown with inconspicuous lenticels, the nodes without interpetiolar glandular fields; pseudostipules small, sub-foliaceous, to 6 mm long and 4 mm wide. Leaves pinnate to bipinnate with up to 13 leaflets, sometimes with a simple tendril; leaflets ovate to elliptic, long acuminate, rounded to cuneate at base, subcoriaceous, 3-17 cm long, 1.4-7.5 cm wide, sparsely but softly pilose below, glabrous above except near base of midvein; petiolules and petiole puberulous to glabrate. Inflorescence an elongate raceme, often several per node, drying olive, minutely puberulous with crisped trichomes, the pedicels 1.3-2.8 cm long; bracts narrow, inconspicuous, 2-3 mm long, the bracteoles located 3-5 mm below base of calyx, sub-linear, 3-5 mm long, 1 mm wide. Flowers with the calyx campanulate, coriaceous, minutely 5-denticulate, 6-7 mm long, 5-8 mm wide, distinctly broader at top, drying brownish or brownish olive, puberulous; corolla yellow, tubular-infundibuliform, ca. 4 cm long, ca. 1.5 cm wide at mouth of tube, the tube ca. 3 cm long, the lobes ca. 1 cm long, glabrous outside and inside; stamens didynamous, the thecae divaricate, 2-3 mm long; pistil 2.5-3.2 cm long, the ovary linear, lepidote and minutely puberulous, 5-6 mm long, 0.8 mm wide; disk patelliform-pulvinate, 1 mm long, 2-2.5 mm wide. Capsule linear, serially slightly constricted between seeds, strongly compressed, 62-88 cm long, 1-2.5 cm wide, conspicuously lepidote and slightly puberulous, drying grayish; seeds thin, bialate, 1.5-1.8 cm long, 6-7 cm wide, the brownish wings indistinctly demarcated from the seed body.

Type: BRAZIL: Amazonas: Manaus-Caracarai Highway, Km. 60, 3 km W of Reserva Experimental Station of INPA, 15 Aug 1974, France, Pennington, Nelson and Ramos 21658 (holotype, INPA, isotype, MO)

Known only from the Manaus region in Central Amazonian Brazil. The known extremes of its range are only about 200 km apart.

Additional collections examined: BRAZIL: Amazonas: Manaus-Itacoatiara Road, km. 157, Gentry and Ramos 13357 (AAU, K, MG, MO, INPA, NY, P, R, US), 13362 (MO, INPA). Manaus-Itacoatiara Road, km. 144, Gentry and Ramos 13370 (INPA, MO). Manaus-Itacoatiara Road, km. 155, Gentry and Ramos 13343 (INPA,

MO). Lago do Castanho-Mirim, 22 Jun 1973, Byron Coelho and Mello s.n. (INPA 39148)(INPA, MO).

This species is closest to Memora racemosa A. Gentry of lower Amazonia from which it differs in much longer vegetative trichomes, shorter calyx, longer puberulous pedicels with bracteoles near the tip instead of the middle, lack of conspicuous lenticels, mostly bipinnate leaves, and longer puberulous (as well as lepidote) fruit. It is also similar to sympatric M. adenophora Sandw. in its pubescent leaves and inflorescence but differs in such characters as non-foliaceous bracteoles, lack of foliaceous pseudostipules, much longer fruit; lack of gland-tipped pubescence and 5-denticulate rather than bilabiate calyx.

PLEONOTOMA BRACTEATA A. Gentry, sp. nov.

Frutex scandens, ramulis acute tetragonis, glabris, sine consociebus glandularum in nodis inter petioles, pseudostipulae foliaceae. Folia 6-30-foliolata, interdum cirrho trifido, foliolis ovatis, glabris. Inflorescentia terminalis, congesta, conspicue bracteata. Calyx cupulatus, minute 5-denticulatus; corolla flava, tubulo-campanulata; ovarium cylindricum. Capsula fusiFormi-oblonga, valde complanata; seminibus complanatis, bialatis.

Liana; branchlets acutely tetragonal with raised detachable angles, glabrous, without interpetiolar glandular fields, a ridge connecting pairs of petioles; pseudostipules foliaceous, 1.5-2.5 cm long, 1-3 cm wide. Leaves ternately (2-)6-30-foliolate, sometimes with a trifid tendril; the leaflets ovate, acute, rounded at base, 1.6-7 cm long, 0.7-4 cm wide, membranaceous, glabrous or slightly and inconspicuously puberulous on base of midvein above; petiole sharply angled, the petiolules and subpetiolules laterally compressed, conspicuously grooved adaxially, glabrous except for a few minute trichomes at joints, petioles 1-4 cm long. Inflorescence a very contracted apparently fasciculate terminal raceme subtended by conspicuous foliaceous bracts (= the pseudostipules of the reduced terminal leaf pair) which completely cover the calyces and buds. Flowers with the calyx cupular, truncate to minutely 5-denticulate, 6 mm long, 3-4 mm wide, sparsely lepidote, the margin ciliate, otherwise glabrous, with conspicuous plate-shaped glands in upper third; corolla (womewhat shrivelled) yellow, tubular-campanulate above a narrowly tubular base, 4-5 cm long, 0.8-1 cm wide at mouth of tube, the tube 3.5-4 cm long, the lobes 0.5-0.8 cm long, the tube glabrous outside, the lobes puberulous and glandular lepidote with plate-shaped

glands at base; stamens didynamous, the anther thecae divaricate, 2 mm long, the connective extended; ovary (partially destroyed) cylindrical, ca. 2 mm long, 0.7 mm wide; disk annular-pulvinate, 1 mm long, 2 mm wide. Capsule thin-valved, strongly flattened, fusiform-oblong, 8-9 cm long, 1.7-1.8 cm wide at middle, glabrous, the midrib not evident; seeds flattened, 1-1.2 cm long, 2.3-2.7 cm wide, bialate, the brown wings not clearly demarcated from seed body.

Type: BRAZIL: Pará: Obidos, Serra da Escama, na capueirão, 9 Sept 1928, Sampaio 4909 (holotype, R; isotype, MO).

Apparently endemic to the area of Obidos and Santarem in west central Para State.

Additional collections examined: BRAZIL: Pará: Serra da Escama, Obidos, 9 Sept 1928, Sampaio 4902 (R, fragment MO). Santarem, Belterra, Porto Novo, capoeira rala; cipó, fruto maduro marron, deiscente, 3 Dec 1978, M. Lobo, R. Vilhena, and B. Ribeiro 86 (MO, NY).

This species is remarkable for its contracted inflorescences subtended by conspicuously foliaceous bracts. It was identified as P. aff. variabilis by Sampaio, but differs from that species in its conspicuous foliaceous pseudostipules as well as the bracteate inflorescence. Sandwith annotated a sheet of this species as P. brittonii (i.e. P. melioides (Moore) A. Gentry), "a form with reduced inflorescence and short calyces." Pleonotoma melioides, probably the closest relative of P. bracteata on account of the shared characters of large foliaceous stipules and relatively large glabrous leaflets, differs in an openly racemose non-bracteate inflorescence, larger flowers and calyces, a larger fruit (14-34 cm long, 1.9-3.4 cm wide) and seeds, and a more westerly geographic range (plus a previously unreported disjunct population in Espirito Santo).

TYNANTHUS SASTREI A. Gentry, sp. nov.

Frutex scandens, ramulis teretibus, glabratis, elenticelatis, sine consociebus glandularum in nodis interpetioles, pseudostipulae carentes. Folia 2-foliolata, interdum cirrho trifido, foliolis ellipticis, sparse et minute puberulis saltem secus venas. Inflorescentia floribus in panicula axillari dispositis. Calyx late campanulatus, truncatus, puberulus; corolla alba, bilabiata, extus puberula; ovarium puberulum.

Liana, branchlets terete, very minutely subpuberulous

when young, glabrescent, finely longitudinally striate, completely elenticellate, without interpetiolar glandular fields or pseudostipules. Leaves 2-foliolate with a trifid tendril, the leaflets elliptic, acuminate, obtuse to acutish at base, 5-12 cm long, 2-8 cm wide, extremely sparsely and minutely appressed-puberulous mostly along main veins above and below, the venation plane above, prominulous below, drying olive-gray; petiolules 2.5-4 cm long, petioles 4-5.5 cm long, very minutely puberulous at least on upper surface. Inflorescence an open axillary panicle, its branches minutely puberulous. Flowers with the calyx broadly campanulate, truncate, 1 mm long, 1.5-2 mm wide, puberulous; corolla white with yellow in throat, bilabiate, 0.6-0.8 cm long, split about half its length, the two upper lobes and three lower lobes respectively almost fused, densely puberulous outside, stamens didynamous, the anther thecae divaricate, 0.5 mm long, twisted near base and reflexed forward, the connective extended; pistil 5 mm long, puberulous, the ovary conical, ca. 1 mm long and 0.7 mm wide, densely puberulous; disk not evident. Capsule not seen.

Type: FRENCH GUIANA: Sinnamary, route de Ste. Elie, 3 km avant la parcelle, Arbocel, liane rampante, normalmente sur végétation forestière, pillosité roussâtre, 23 Sept 1977, Sastre 6015 (holotype, MO; isotype P).

Endemic to the coastal forests of French Guiana.

Additional collections examined: FRENCH GUIANA: Bord de la piste de St. Elie, Km. 10.2, liane ligneuse rampant, grandes inflorescences axillaires avec nombreuses petites fleurs jaunes à corolla rapidement caduque, 18 Apr 1979, M. F. Prevost 529 (CAY, MO).

This species is most similar to T. schumannianus (O. Ktze) A. Gentry on account of its small flowers and glabrescent vegetative parts. It differs most conspicuously from that species in its smooth, completely elenticellate branchlets.